Bilateral Reduction Mammoplasty with Nipple Areola Complex Graft in Ten-Year-Old Girl with Juvenile Gigantomastia: A Case Report

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Abstract

Gigantomastia is a rare benign disorder characterized by excessive breast enlargement. Although a standard definition has yet to be established, it is generally known as an excess of approximately 1.5 kg tissue per breast that requires reduction. We report the case of a ten-year-old girl who presented with hugely enlarged breasts. Hormonal assay was normal. Breast ultrasound revealed increased fibroglandular breast tissue with an area of interstitial fluid along with prominent vascularity and dilated veins. There was no evidence of focal masses or collections, ductal ectasia, or axillary lymphadenopathy. Magnetic resonance imaging (MRI) revealed extremely dense breasts with more than 75% fibroglandular tissue, consistent with juvenile breast hypertrophy. Bilateral reduction mammoplasty with nipple areola complex graft was performed. Histopathological report confirmed benign gigantomastia.

Keywords: Breasts; Gigantomastia; Mammoplasty; Nipple Areola Complex Graft; Bahrain.

Introduction

Gigantomastia is a rare, benign disorder characterized by excessive enlargement of the breast. There is no universal definition or classification for this condition, but the general consensus describes gigantomastia with a cutoff point of 1.5 kg per breast that requires reduction.[1] An extensive study documented only a total of 115 gigantomastia cases reported between 1910 and 2006[2] and classified these as juvenile, pregnancy-induced, drug-induced, or idiopathic. Half of the cases were juvenile (49.6%) followed by pregnancy-induced ones (35.7%).[2] With regards to juvenile gigantomastia, rare familial incidences have also been reported.[3]

Juvenile gigantomastia, by definition, occurs with the onset of puberty shortly after thelarche.[4] For young girls, this condition may lead to severe emotional trauma, reduced self-esteem, and social isolation.

We present a unique case of juvenile gigantomastia, which to our knowledge, is the first case to be reported from the Kingdom of Bahrain. Two similar cases in girls aged 13 and 15 years were reported from Iraq.[5] Two cases of gestational gigantomastia were reported from Saudi Arabia and the United Arab Emirates,[6,7] and one case of idiopathic gigantomastia from Tunisia.[4]

Case Report

A ten-year-old Bahraini girl presented to the emergency department with ten days' history of progressive bilateral breast enlargement. The progression had accelerated over three days prior to the presentation, during which she was

having her first menstrual cycle. She did not complain of any other physical symptoms, but she did have a depressed mood and reduced self-esteem. She had stopped attending school due to fear of social embarrassment. The onset of her thelarche was two months prior to presentation. The patient denied history of taking any medication.

On physical examination, she appeared normal (BMI: 18.85 kg/m^2) except for her hypertrophic breasts. The right breast was much larger than the left breast [Figure 1]. There was no overlying skin discoloration or ulcerations and no nipple changes. On palpation, the breast tissue was soft and mildly tender. There were no palpable masses or axillary lymphadenopathy.

Figure 1: The patient's breasts at presentation before surgery.

Breast sonography revealed increased fibroglandular breast tissue with an area of interstitial fluid along with prominent vascularity and dilated veins. There was no evidence of focal masses or collections, and there was no ductal ectasia or axillary lymphadenopathy. Laboratory assay for hormonal level yielded normal results [Table 1].

Table 1: Summary of hormonal test results.

Hormonal test	Result	Reference range
Follicle Stimulating Hormone (FSH)	2.9 IU/L	0.2–3.8 (child) 3.3–11.3 (adult female)
Luteinizing Hormone (LH)	2.2 IU/L	0.1–0.6 (child) Follicular phase (1.9–12.5) Midcycle peak (8.7–76.3) Luteal phase (0.5–16.9)
Estradiol	435 pmol/L	72–530 (follicular phase) 234–1309 (ovulatory phase) 204–786 (luteal phase)
Prolactin	8.89 ng/mL	3.9–23.5 (children) 3.9–29.5 (adult female)
Thyroid stimulating hormone (TSH)	3.70 mIU/L	0.25–5
Free thyroxin (FT4)	16 pmol/L	6–24.4

Abdominal and pelvic ultrasound results were unremarkable. Magnetic resonance imaging (MRI) of brain was normal. MRI of breast revealed extremely high breast density with more than 75% fibroglandular tissue, showing marked post-contrast enhancement, consistent with a diagnosis of juvenile breast hypertrophy [Figure 2].

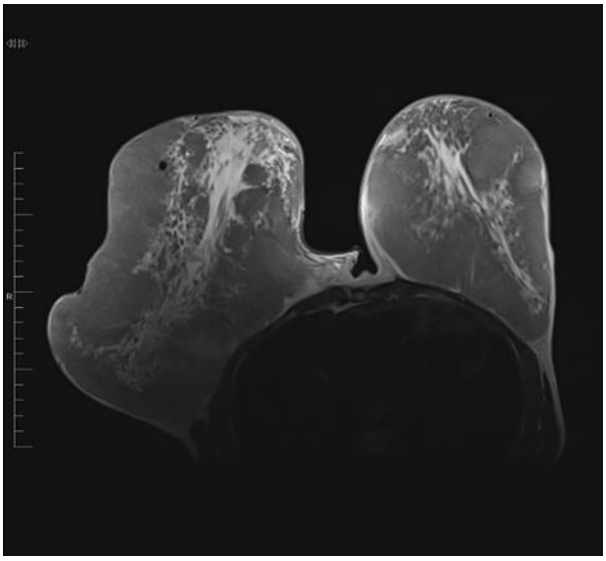

Figure 2: Axial T2 weighted magnetic resonance imaging of the chest shows significant asymmetrical enlargement of the breast, more on the right along with extremely dense fibroglandular tissue bilaterally.

During evaluation, the patient was seen by different teams including the pediatric, general, and plastic surgery teams, alongside the primary team of pediatric endocrinology. Following the intensive workup and proper counseling, the patient underwent bilateral reduction mastoplasty with nipple areola complex (NAC) graft [Figure 3]. The excised right breast weighed 3800 g and the left breast, 1076 g. The histopathological examination revealed a well-demarcated fibroepithelial tumor with pericanalicular growth pattern [Figure 4]. The stroma was cellular and focally vascular variable hyalinization and focal myxoid change. There was variable stromal mitosis between three to ten high-power fields, but no stromal cellular atypia or overgrowth. The histopathological features were consistent with the diagnosis of juvenile fibroadenoma.

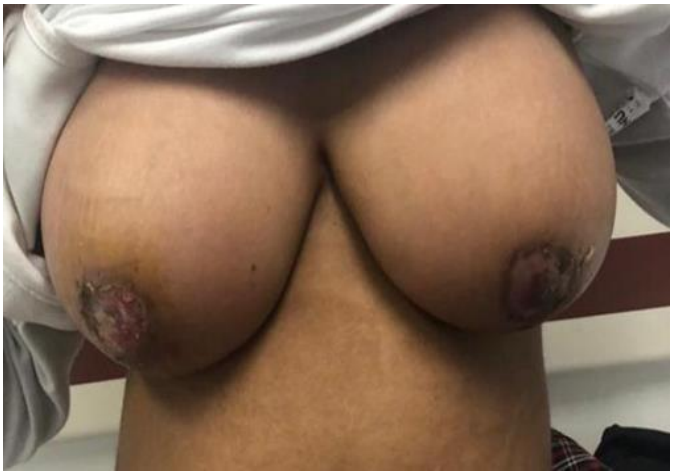

Figure 3: The patient's breasts one month post bilateral mammoplasty with nipple areola complex graft.

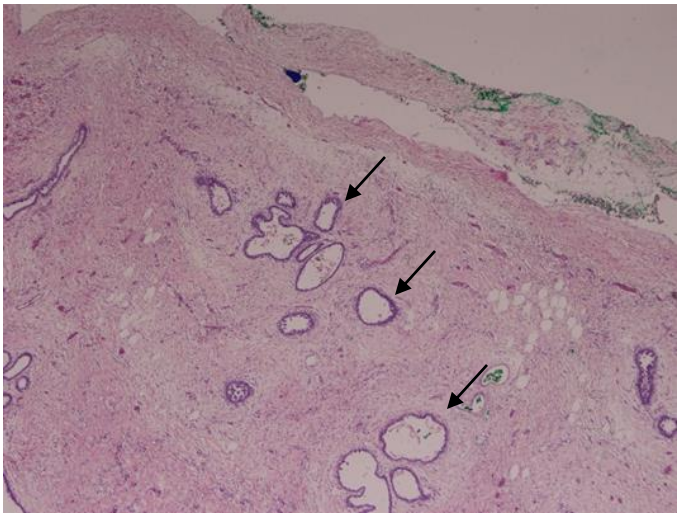

Figure 4: Well-circumscribed fibroepithelial lesion with occasional dilated glands and homogeneous spindle cell stroma, hematoxylin and eosin stain magnification = 40 ×.

After surgery, the patient had an unremarkable hospital course and was discharged on the fifth post-operative day. She underwent regular follow-ups at the general surgery and pediatric endocrinology clinics and continued to recover well. Six months later she presented with a re-growth of the right breast which was to a lesser extent than the first time. No further surgical intervention was considered necessary. Two years later, the patient continues regular follow-up and stays asymptomatic.

Discussion

The current case of juvenile gigantomastia in a ten-year-old girl could be considered idiopathic as there was no identifiable cause for this exceedingly rare condition. To our knowledge this is the first such case reported in Arabian Gulf region. Since it was diagnosed during puberty, excessive hormonal release or increased hormonal sensitivity is suspected to be the cause (which also applies to gigantomastia during pregnancy).[4] The treatment options for juvenile gigantomastia consist of medical and surgical managements. Medical therapy includes but is not limited to tamoxifen, medroxyprogesterone, bromocriptine, and danazol which can stop further growth of the breasts, but without reduction of the size or relief of the symptoms.[3] It has limited outcome and controversial long-term safety.[3]

In the present case we opted for surgery as the breast enlargement was hugely disproportionate to the child's age and BMI. Equally important was to mitigate her severe emotional distress, low self-esteem, and potential social stigma. A bilateral reduction mammoplasty with nipple areola complex (NAC) graft was performed, with the aim of reducing the breast volume while preserving the normal physiological breast function.

Though this approach preserved the native breast tissue, it carried the risk of recurrence.[4] Therefore mastectomy with implant reconstruction is often promoted as the definitive treatment.[8] Our patient had experienced some regrowth after six months from the surgery, but the treatment outcome so far is satisfactory, and she remains asymptomatic to date. However, later on, pregnancy can be a cause for recurrence.[5]

A meta-analysis of cases of virginal mammary hypertrophy revealed that subcutaneous mastectomy significantly reduced the risk of recurrence compared to reduction mammaplasty.[9] Moreover, in the four cases of juvenile gigantomastia reported by Baker et al.[8] three patients experienced recurrence following reduction mammaplasty, one of which was induced by gestation. The one patient who did not experience recurrence had undergone reduction mammaplasty using a free nipple graft.[8] The same technique has been found elsewhere to be superior to reduction mammoplasty in terms of lower risk of recurrence.[10]

Hoppe et al., 2011 advocated for the need of a multi-disciplinary team to manage the diagnosed patients.[9] We adopted this approach and the patient was seen by different disciplines. However, the input of the child and adolescent mental health team would have been of great value to alleviate the child's psychological stress, which we strongly recommend for future cases.

Conclusion

The rarity of gigantomastia poses diagnostic and management challenges, but should be considered in cases of abnormal puberty and pregnancy. Gigantomastia also has severe psychological impact on children and adolescents, and professional assessment and support is of paramount importance. We recommend having a common registry in the Arabian Gulf region for such rare conditions to help understand their natural history and prevalence.

Disclosure

The authors declare no conflicts of interest. The patient's mother gave consent for the data and pictures to be published.

Authors' Contributions

Khadija Ali and Manar Husain contributed equally to this paper and should be considered co-first authors.

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